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ABSTRACT

The purpose of this research was to investigate egocentrism and to investigate the relationships between egocentrism, popularity, and certain playground behaviors for students in Grades 1-5. More than 200 students participated in the study. The results showed that: (1) egocentrism decreases with age, (2) males were less egocentric than females at every grade level, (3) the smallest absolute value of the correlations of egocentrism scores, sociometric scores, and teachers' ratings with total playground behavior observation scores was .59, (4) a strong relationship existed between egocentrism and popularity at Grade 5, and (5) teachers' ratings of popularity and sociometric scores were highly related. The instrument used to measure egocentrism was new. Factor analyses were used to investigate the underlying relationships of the items. The items in the factors from the analysis tended to go together as hypothesized. (Author)

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A Study of Egocentrism and Socialization

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People seem to differ in their ability to anticipate how others will think, feel, and react. In fact, some individuals become quite skillful at anticipating what another person will actually do once they have correctly anticipated that person's thoughts and feelings. But some individuals say and do things with apparent ignorance of what behavioral consequences will follow. What are the differences in personality or in intelligence which account for the social adeptness of some and the social clumsiness of others? We think that part of the answer lies in the socialization process of childhood.

To a young child, parents are the primary source of morality and truth. Because of their authority, the child accepts most statements of fact from them as unquestionable and his thoughts are essentially extensions of his parents' thoughts. Since he absorbs these thoughts as his own, he has little conflict with points of view opposing his and therefore his own point of view is seldom challenged. Piaget believes that a young child's universe is undifferentiated and that the child is not aware that there is a domain of thought different and separate from his own. He has not had sufficient experiences with the external universe to understand the interdependence and independence of himself and his environment. The naive child believes everyone sees what "I" see, hears what "I" hear, feels what "I" feel, knows the people "I" know, etc. His conceptions of reality are based only on his own point of view. Piaget

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has called this kind of thought "egocentric" and the essential characteristic of such thinking is that it is a form of reasoning which occurs when a person only has their own perspective in mind.

Through maturation and progressively more social interactions, a child's construction of reality gradually becomes differentiated. As a result of cooperation and communication with others and constant efforts to adapt to his environment, the child becomes aware of his own separateness and relativity. One important source for the breakdown of egocentric knowledge is the child's interactions with peers. Through them, the child's knowledge about the world is changed. An egocentric child who believes that night comes because "I" have to go to sleep may be challenged by the nonegocentric child who believes that night comes because of the facts of rotation and the earth-sun relationship. From such encounters, the egocentric child begins to become aware that there are viewpoints different from his own. We think that these viewpoints are essential for the child's socialization and will affect how well a child gets along with his peers and possibly even how well the child will do in school.

In an effort to bridge the gap between the cognitive and social dimensions of development, several investigators have studied the relationship between egocentrism and popularity in school age children. Rubin (1972) found a relationship between popularity and communicative egocentrism with first graders and also with a sample of children from grades K and 2 (1973). Tasks involving nonsense figures were used to measure communicative egocentrism. Karmos and Milcic (1977), using a different measure of egocentrism, found the magnitude of the relationship between egocentrism and popularity to be greater during grade 5 than in grades 1 through 4. Egocentrism was measured by a new instrument containing

perspective, set-subset, and set-membership items.

The purpose of this paper is to describe the instrument used by Karmos and Milcic and to present some of the results of its use. The main reason for creating the egocentrism test was to give elementary school educators a practical instrument for measuring egocentric behavior in young children. The test was limited in the type of egocentric behaviors considered. The two types of egocentrism studied were perspective and set-subset relations. Perspective problems consisted of right and left relations, the brother relation , role perspective and visual perspectives. The concept of set and subset, which Piaget (1972) believes is affected by egocentrism, was contained in several items.

The focus of the research discussed in this paper is on egocentrism and socialization in elementary school students. The test was expected to reflect that egocentrism would decrease with age and that high egocentrism would correspond to low popularity and non-social playground behaviors. Sex differences were also examined and teachers' ratings of popularity were compared with students' ratings of popularity as reflected by sociometric items.

Review of Literature

After a search of the literature, we found no practical paper-pencil, group administered instrument for measuring egocentrism. Instruments used to measure egocentrism usually involved communication tasks or spatial perspective tasks, both based on Piaget's investigations. Several investigators have used communication situations (Rubin, 1972, 1974; Flavell, 1968; Deutsch, 1974). Others have used Piaget's (1967) spatial arrangement of three mountains to study children's spatial perspectives. Piaget found that an egocentric child would think that

a person who viewed the mountains from the top would see the same visual picture as the child saw from the side. Several investigators have used ideas from Piaget's mountain problem to study egocentrism (Rubin, 1973, 1974, 1975; Coie & Dorval, 1973). Research results comparing young and older children show that older children more readily assume a perspective other than their own (Karmos & Milcic 1977; Weinheimer 1972; Alvy 1968; Stuart 1967; Sullivan 1967; Feffer & Gourevitch 1960).

Kenneth H. Rubin has done several studies on egocentrism. Rubin (1973) used factor analysis techniques to study cognitive egocentrism (measured by private speech forms), role-taking egocentrism (discrimination of different characters' thoughts in a cartoon), spatial egocentrism (stimulus display), communicative egocentrism (description of nonsense figures), chronological age, mental age, conservation tasks, and popularity scores from a sociometric test. The two extracted factors were a Decentration factor and a Popularity factor. For the first, all variables except the popularity variable loaded at .51 or above and the second factor consisted of the one popularity measure with a loading of .97. The cut-off for factor loadings was conventionally set at .30.

Weinberg (1963) used questions of the brother relations and left-right relations to show egocentric reasoning in young children. The items were modified versions of those used by Piaget in some of his investigations. Example questions were: (1) There are three brothers in a family, John, Dick, and Charles. How many brothers has John? And Dick? And Charles? (2) The examiner sat opposite the subject and asked the subject to indicate his own right and left hand. Then the examiner asked the subject to "show me my right hand; now my left.

Show me my right leg; now my left." The subject's conceptual level was measured by a concept-choice test and color-form test. The concept-choice test consisted of 17 sets of pictures with three pictures in each set. One picture was a stimulus for the other two. For example, a stimulus card was human foot and the two response cards were a human hand and a shoe. A functional (abstract) response was the human hand and a concrete response, a shoe. The Weigh Color-Form Test consisted of 12 tiles of 3 shapes and 4 colors. The task was for the subject to group the tiles in one way and then regroup them in a different way. The subjects were classified by whether they grouped by both form and color, or by form or color alone, or by neither. Weinberg found that 6 to 8 year old children who could think better about relations exhibited higher levels of reasoning and more functional and abstract conceptualization.

Prothro (1943) and Lane and Kinder (1939) also studied notions of relativism but with a group of mentally deficient adults and children. Their results were in opposition to Weinberg's. Weinberg conjectured that the differences could be accounted for in the use of older mentally deficient subjects. He conjectured that their inability to perform relativism tasks was probably more a function of their general intelligence than of egocentric reasoning.

The Egocentrism Instrument

The instrument used to measure egocentric reasoning in the studies described here was developed by one of the authors. The test consisted of items measuring left-right relations, brother relations, set-subset relations, set-membership relations, and role and visual perspectives. These items were based on work done by Piaget (1967, 1972). It is a paper-pencil instrument that can be administered in approximately

20 minutes in an ordinary classroom setting. Initially, the preliminary support for the instrument's validity is that all the types of egocentrism items in the test were used by Piaget during individualized sessions with school age children in the development of his theory. The findings of the studies reported in this paper provide further evidence for validity. A test-retest reliability check with 175 students attending grades 1,3, and 5 yielded a correlation coefficient of .86.

There were 25 items on the test. The first three items were demographic and were not included in the analyses. Items 4, 5, 6 and 7 consisted of pictures of a person or groups of people. The student was asked to distinguish some left-right characteristics in the pictures; for example, "Circle Jane's left leg." For items 8A, 8B, 8C, the brothers of a family were pictured and the student was instructed to pretend that he was one of the brothers in this fictional family. The questions were: (8A) In the Smith family, how many brothers do you have? (8B) How many brothers does Frank have? (8C) How many brothers does Tom have? Items 9 to 13 were concerned with membership in intersecting sets and in non-intersecting sets. For example, item 10 asked the student if someone can live in both Illinois and the United States at the same time, while item 13 asked if someone can live in both Illinois and Kentucky at the same time.Item 14 instructed the student to draw a bicycle with handle bars and chain. The drawing was judged on how functional these parts would be on a bicycle if it actually existed as it was drawn. Items 15 and 16 instructed the student to draw set-subset relations which involved sets familiar to the students, such as hometown, nearby town, and the state that they lived in. Items 17 and 21 asked the student to choose the number of peers he preferred to play with. Item 17 had six circles with dots

drawn inside to represent groups of children on the playground. The student was instructed to "X" the group he or she would like to be with. The choices were groups of 1, 2, 3, 4, 5, or 6 children. Item 21 was a multiple choice item where three options (play alone, play with one other student, play with a group) were given for the number of peers the student would like to play with. Items 18, 19 and 20 each appeared on different pages and involved visual perspective problems. For each item, at the top of the page there was a picture of four people, a tree (one person was in it),and a dog. At the bottom of the page was a picture of the dog from the perspective of one of the four people. After viewing this perspective, the student was asked to mark on the top picture the person who saw the dog in that way. Items 22 through 25 were in multiple choice form and included conceptions of why the night comes (22), what causes the wind (25), and also moral dilemmas about stealing and copying in school. We were interested in how much students had accepted certain ideas imposed by authority figures (22, 25) and we were also interested in the role perspectives a student would take in certain moral dilemmas (23, 24).

Methods and Techniques

A test booklet was developed which consisted of (1) sociometric items, (2) teacher's rating scale of student popularity, and (3) items which measured egocentric behavior.

1. Sociometric items: These items were used to measure popularity. After a review of the literature, six items were selected. Each student was asked to choose two of his classmates for each of the following situations: those he would most like to (1) move

to another classroom with, (2) work with, (3) play with. He then chose two of his classmates he would not like to (4) move to another classroom with, (5) work with, (6) play with.

2. Teacher's rating scale of student popularity: The teacher was asked to rate each student as high, average, or low in popularity.
3. Egocentrism test: The test consisted of 25 items pertaining to egocentric behavior.

Fifteen of the students were selected for playground observations. A student was selected only if he could be categorized as high egocentric and low popular or low egocentric and high popular based on his egocentrism score, the teacher's rating of his popularity, and on his sociometric score. None of this information was known to the one author who conducted all the observations. Every student was observed for 15 minutes at 2 different times over a 3 week period. The behaviors observed were (1) another child approaching the student, (2) the student approaching another child, (3) touching or other physical contact between the student and another child, (4) the number of persons the student was playing with, (5) the number of times the student changed play areas, and (6) the frequency of the student engaging in vigorous motor activities such as running, jumping, and playing basketball. The arithmetic sum of these scores was calculated and called "the student's total playground behavior observation score."

Correlational analyses, t-tests, and regression analyses were the initial techniques used to analyze the data. An alpha level of .05 was used for the entire study.

Data Source

The 219 subjects were students attending grades 1 through 5 in a consolidated school district. There were 2 classes at each grade level:

grade 1 (48 students), grade 2 (38 students), grade 3 (50 students), grade 4 (45 students), and grade 5 (38 students). They were from two all-white rural communities in southern Illinois.

Results and Conclusions

The results showed that: (1) egocentrism decreased with age, (2) males were less egocentric than females at every grade level, (3) a strong relationship between egocentrism and popularity existed at grade 5, (4) teachers' ratings of popularity and sociometric scores were highly related, (5) there was no strong curvilinear relationship between any of the variables used in the study and there were no significant differences in males' and females' standard deviations for any of the variables, and (6) .59 was the smallest absolute value of the correlations of total playground behavior observation scores with egocentrism scores, sociometric scores, and teachers' ratings of popularity.

The results of the study which were statistically most significant were the high correlations of total playground behavior observation scores with egocentrism scores, sociometric scores, and teachers' ratings of popularity. Table 1 summarizes most of the correlations, where a high egocentrism score would mean highly egocentric, a high teacher's rating would mean more popular, and a high sociometric score would mean more frequently chosen by classmates. Note the correlations of .70, .72, and .77. The weaker correlations for the other playground behaviors are not included. It seems quite clear that egocentrism, popularity, and playground behaviors had more than casual relationships to each other for the 15 students involved, and it surely would be worthwhile to further investigate these relationships over a larger number of students.

Table 1

Correlations of Playground Behavior
With Egocentrism and Popularity

	Total playground behavior scores	Touching or other contact	Number of persons played with	Frequency of vigorous activity
Egocentrism Scores	-.59	-.56	-.47	-.54
Total Sociometric Scores	.62	.70	.64	.48
a) Move with	.59	.62	.56	.50
b) Work with	.61	.70	.65	.47
c) Play with	.61	.72	.66	.42
Teachers' Ratings	.60	.59	.77	.53

Egocentrism scores decreased as grade level increased. A one-tailed t-test was conducted to compare mean performance between grades on the egocentrism items. The results showed decreasing means and a significant difference between every pair of consecutive grade levels: first grade (13.9), second (11.3), third (8.3), fourth (6.4), fifth (4.5). This corresponds to Piaget's theory and lends support to construct validity for the egocentrism test.

Correlations also indicated that the relationship between egocentrism and popularity tends to increase with age. Pearson correlations were computed between egocentrism and sociometric scores for all of the 219 students. A negative correlation of -.19 indicated that the more egocentric child tended to be less popular. A grade-by-grade analysis revealed moderate negative correlations between egocentrism scores and sociometric scores in grades 3 and 5 (-.32 and -.56, respectively). Since popularity usually becomes more important as children grow older, the relationship between egocentrism and popularity was expected to be

stronger at the higher grade levels.

The teachers rated the popularity of each student on a scale of high, average, and low. The correlation of -.20 between the teachers' ratings and egocentrism scores was significant for the entire sample. The correlations were weaker at the earlier grades. The strongest correlation occurred at the latest grade, grade 5 (-.40). But there were moderate correlations for each of the grades, with grade 2 having the weakest one (-.25).

Correlations were computed between teachers' ratings of student popularity and popularity defined by sociometric scores to determine how accurately teachers could predict popularity of students. Highly significant correlations ($p = .001$) were found at each of the five grade levels (.44 for grade 1, .60, .60, .70, and .55 for grade 5). The teachers were apparently very good judges of student popularity.

Male performance and female performance on the egocentrism items were compared by a two-tailed t-test. For the whole sample, there was a significant difference between males and females, but a grade-by-grade analysis revealed a significant difference only in grade 5. However, at every grade level males were less egocentric than females. This result seems to be the most important from this study. Sex role expectations for the male could be a major contributor to the result. For example, even during preschool years there are expectations for the male child to play with and compete with other males who are often older. Interactions with less egocentric children challenge and modify his point of view. Play and competition frequently make it painfully clear that, "you're not doing it right, it should be done this way, your way is wrong." A child who ignores such messages risks ostracism and

rejection. So he is likely to modify his point of view based on the perspective of others. Sex-role expectations in our culture might indeed be influencing cognitive characteristics of students.

A Second Study: The Factor Structure of the Egocentrism Test

To investigate some of the underlying relationships among the items of the egocentrism test, factor analyses were performed on data collected from a sample of three hundeed ninety-two students attending grades 1 through 6 in the same two schools that all the data from the preceding study were collected from.

Eight factors were hypothesized: Left-Right Perspectives items 4, 5, 6, 7; Relational Perspective items 8A, 8B, 8C, 18, 19, 20; Membership Relations on Sets, items 9, 10, 11, 12, 13; Drawing of a Bicycle, item 14; Subset Relationship items, 15, 16; Ideas Imposed by Authority Figure items 22, 25; Role Perspective items 23, 24; Playground Egocentrism items 17, 21.

A principle factor analysis (PA1) with the minimum eigenvalue equal to 0 was first employed, followed by a principle factor analysis (PA2) with the minimum eigenvalue restricted to 1. The first analysis (PA1) was to determine the number of factors in the data structure while the second analysis (PA2) was used for the extraction of factors, a varimax rotation of the factors, and an actual analysis of the factor loadings.

After PA1 and PA2 were conducted, we attempted to interpret the 8 factors which were extracted. Four items (22-25) complicated interpretations of several factors, apparently because of their dissimilarity to the other test items. These were the items "Why does the night come?", "What causes the wind?" and two items on word dilemmas. These items were deleted for the final factor analysis. This final analysis yielded 6 factors and each one was clearly interpretable. The cut-off level for

the interpretation of factor loadings was set at .40. The 6 factors explained 62 percent of the total variance. Three items (6, 17, 21) did not load on any factor highly enough to be interpretable.

The final factor structure had six factors, each of which corresponded to a hypothesized factor. Factor I (items 4, 5, 7) differed by one item (item 6) from the hypothesized factor Left-Right Perspective and was labelled with the same name. Factor I explained 44.8 percent of the total variance. For item 6, the student was to mark the right hand of a person drawn from the back. The people in items 4, 5, and 7 were drawn from the front. The highest loading of item 6 (.28) was on Factor I.

Factor II, (items 8A, 9, 14, 18, 19, 20) was called "General Perspective". It corresponded most closely to the hypothesized factor Relational Perspective (items 8A, 8B, 8C, 18, 19, 20). Items 18, 19, and 20 asked the student to identify persons viewing a dog from different perspectives. Item 9 asked the student if he could live in his town and Illinois at the same time. Item 14 concerned drawing a chain and handle bars in relation to a bicycle. Item 8A asked the student to pretend to be one of three children in a fictional family and to answer, "In the Smith family, how many brothers do you have?". Factor II explained 20.2 percent of the total variance.

Factor III (Role Perspective) contained items 8B and 8C which had been expected to load on the same factor with item 8A. For these two items, the student was asked to assume the perspective of, for example, Frank in a fictional family of three brothers (Frank, Tom, and the student himself) and to answer, "How many brothers does Frank have?" Presumably, these two items formed a separate factor because students were required to "play a role" of someone else. Factor III explained 12.4 percent of the

variance.

Factor IV (Classification) was identical to the hypothesized factor Subset Relation. Given a circle for their home town, students were asked to draw a circle for Illinois (item 15). Given a circle for Illinois, they were asked to draw a circle for their home town and for a nearby town (item 16). Factor IV explained 9.9 percent of the total variance.

Items 9-13 were hypothesized to form a factor called "Membership Relations on Sets". However, item 9, "Can you live in both (students' town) and Illinois at the same time?" loaded on Factor II, presumably because the familiarity with the students' home town allowed them to answer from their own perspective. Items 12 and 13, "Can someone live in both Illinois and California at the same time?" and "Can someone live in both Illinois and Kentucky at the same time?" formed Factor V (Membership in Disjoint Sets), which explained 8.4 percent of the variance. Items 10 and 11, "Can you live in both Illinois and the United States at the same time?" and "Can you live in both Kentucky and the United States at the same time?" formed Factor VI (Membership in Intersecting Sets), which explained 4.3 percent of the variance.

With the exception of two items (9 and 14), all items which were together on the same factor from the analysis were together on one of the hypothesized factors. That is, the items in the factors from the analysis tended to go together as hypothesized.

It was expected in the development of the test that egocentric children would have difficulty reasoning from various perspectives. It was also expected that they would have difficulty dealing with set-subset and with set-membership relations. The analyses established three factors (I, II, III) on perspective, one factor (IV) on the set-subset relation, and two factors (V, VI) on the set-membership relation.

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